

Appendix A

Description of Mercury and Multipollutant Control Performance and Cost Model

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1. Model Description

The Mercury and Multipollutant Control Performance and Cost Model (MMCM) used in this effort is an Excel spreadsheet model that can be used to assess the performance and cost of mercury (Hg) control systems that utilize Powdered Activated Carbon (PAC) injection or multipollutant control methods to reduce mercury emissions. This model first calculates key performance parameters that are then used to calculate detailed capital costs and O&M costs of a mercury control technology for either bituminous or subbituminous coal-fired power plant applications. This overview describes the model layout, its specific capabilities, and its current limitations.

1.1 MMCM Layout

The spreadsheet model is divided into several parts. Gas conditions are developed from the Coal Utility Environmental Cost (CUECost) model and mercury control performance and cost analysis is performed on additional worksheets that were developed for each of the technologies of interest.

CUECost Workbook Sheets

The following worksheets are part of the CUECost workbook and were used in this effort.

Plant Configuration – *This CUECost worksheet is used to input the plant configuration and economic parameters for the analysis of interest.*

Input and Calculation Summary – *This CUECost worksheet summarizes the inputs of the Plant Configuration Sheet and summarizes the resulting calculations of cost and performance.*

Constants_CC - *This CUECost worksheet is where calculations are performed to determine exhaust gas conditions for the boiler. This sheet includes several tables of constants that are used in calculations performed in this sheet and other sheets. This sheet also includes a library of eight coals that may be used in the CUECost combustion calculations.*

ESP FF Cost & Tech Results – *This CUECost worksheet performs calculations related to the cost and performance of dry ESP's and reverse gas fabric filter systems (RGFF).*

LSFO Cost & Tech Results – *This CUECost worksheet performs calculations related to the cost and performance of Limestone Forced Oxidation Wet FGD technology.*

LSD Cost & Tech Results – *This CUECost worksheet performs calculations related to the cost and performance of Lime Spray Dryer Technology.*

NOx Cost & Tech Results – *This CUECost worksheet performs calculations related to the cost and performance of SCR and SNCR-NOx control technologies.*

CUECost is described further in the following reference:

Keith, R., R.; Blagg, C.; Burklin, B.; Kosmicki, D.; Rhodes, A.; Waddell, T. "Coal Utility Environmental Cost (CUECost) Workbook User's Manual, Version 1.0," EPA-600/R-99-056 (NTIS PB99-151938), June 1999.

In addition to the CUECost worksheets above, the worksheets below were developed for performing mercury cost and performance calculations for this report.

PAC Inj Cost & Tech Results – In this worksheet, the level of mercury in the flue gas prior to removal by any equipment is estimated from the coal mercury content assuming that all of the mercury in the coal is released to the exhaust gases. A level of mercury reduction is specified. The amount of total mercury control specified in the Plant Configuration worksheet is compared to the amount of mercury reduction that is estimated to occur from existing equipment. The mercury removal from existing equipment is determined by Equations 1 and 2 described in Section 3.5 of this document. If additional mercury reduction is necessary, the model estimates how much additional reduction will be necessary by solving for $f_{\text{PAC Injection}}$ from Equation 6 of Section 4.1.1. Based upon the existing configuration, the fuel type, the sorbent type and whether or not a fabric filter is added downstream of the PAC injection, a PAC Injection Matching Key is established which determines the constants A, B, C and D for Equation 9 of Section 4.1.2. Using this equation and the necessary PAC removal rate ($f_{\text{PAC Injection}}$), the concentration of PAC injected into the gas stream is calculated in terms of lb/MMacf. PAC injection rate can then be determined by calculating the PAC concentration times the gas flow rate.

In this analysis it was assumed that spray cooling is not used, which is the default used in the worksheet. However, it is possible to specify spray cooling.

A downstream fabric filter may be specified, and it is always assumed to be a PJFF. In all cases except for installation upstream of an SDA the PJFF will only be used to capture the PAC sorbent, such as in a COHPAC arrangement. When installed upstream of a SDA, the PJFF will capture PAC and fly ash, in which case a full PJFF will be necessary.

Adv Dry FGD Cost & Tech Results – This worksheet performs process and cost calculations related to the Advanced Dry FGD technology. The user specifies the approach to saturation and the level of SO₂ Control. Inlet gas conditions, including SO₂ and chlorine concentration, are determined by CUECost (air preheater outlet conditions from the Constants_CC worksheet). Based upon the gas conditions, an algorithm for SO₂ removal versus Ca/S stoichiometric ratio is selected from among the algorithms shown in Section 4.2.2 and sorbent injection rate is determined. 95 percent mercury removal and 90 percent SO₂ removal are assumed for the analysis. These are supported in Section 4.2.2. Other consumables, such as water and power for auxiliaries, are determined from the relations discussed in Section 4.2.2.

ECO Cost & Tech Results – This worksheet performs process and cost calculations relating to the ECO technology. Inlet gas conditions determined by CUECost (air preheater outlet conditions from the Constants_CC worksheet) and assuming particulate removal by an upstream

ESP or FF (as specified in CUECost by the user). Using the relationships described in Section 4.2.1, consumables (power, water, ammonia, and specialty chemicals) and saleable product are estimated. In this analysis 85 percent mercury removal, 90 percent NO_x removal and 98 percent SO₂ removal is assumed for the ECO system. These are supported in Section 4.2.1.

1.2 Capital Cost Estimating Methods

Total Capital Investment is determined from the following capital cost components:

Installed Process Equipment – This is the cost of the equipment installed (retrofit) on a flange-to-flange basis in total \$ (not \$/kW). Algorithms used for this cost are the following:

PAC Sorbent Injection System

$$RDF \cdot (+ (400 + 900 + 2600 \cdot 1.07) \cdot (PAC/5486)^{0.65}) \cdot 1000$$

where PAC is the mass flow rate of PAC at full load (lb/hr) and RDF is the retrofit difficulty factor.

This algorithm was used in the NETL cost model of EPA-600/R-00-083.

PAC Sorbent Disposal System

$$RDF \cdot ((DS/6) \cdot 100000 \cdot (1 + 2 + 6 + 0.07 \cdot 6))$$

Where DS is the Disposal Solids (either sorbent plus all of the plant ash or sorbent and a small portion of plant ash, depending upon plant configuration, measured in Tons/h).

This algorithm was used in the NETL cost model of EPA-600/R-00-083. This algorithm is also used to estimate the cost of the PJFF material handling system.

PJFF After PAC

If in a COHPAC arrangement:

$$RDF \cdot MW \cdot 22500 \cdot (MW/300)^{-0.2}$$

If a full PJFF for ash and PAC collection

$$RDF \cdot MW \cdot 47500 \cdot (MW/300)^{-0.2}$$

Where MW is the plant capacity at full load in MW and RDF is the Retrofit Difficulty Factor. These are based upon an estimated \$20-\$25/kW flange-to-flange erected cost of a PJFF in a COHPAC-type arrangement or a \$45-\$50/kW cost for a full PJFF if installed on a 300 MW boiler. This cost also includes suppliers contingency, but does not include additional project contingency, the cost of foundations, ductwork, an induced draft fan, material handling equipment, general facilities cost and owner's costs.¹ So, with these additional costs, it would not be surprising to have the PJFF in a COHPAC-type arrangement approach \$45/kW, which was estimated in a Memo from Michael Durham, ADA Environmental Solutions, to Mary Jo Krolewski, U.S. Environmental Protection Agency.

¹ Information collected from technology suppliers on flange-to-flange cost of PJFF was evaluated. Data was available from about 100 MW to over 600 MW. This algorithm was shown to provide a reasonable fit to the data points across the size range, and is assumed to continue beyond the range.

Another source, “Economic Evaluation of Particulate Control Technologies”, Volume 1: New Units EPRI TR-100748 September 1992, says that a PJFF for all of the ash flow on a new unit will cost about \$50/kW (installed). Of that, just over 50 percent (about \$25/kW) is the actual fabric filter unit (including bags) and about 5 percent (or about \$2.5/kW) is fan and ductwork. The remainder is the fly-ash handling system and other miscellaneous costs. It is likely that prices have escalated somewhat from that time, which would make it consistent with what is discussed above.

The -0.2 exponent was chosen as an approximate scaling factor based upon assessment of data provided,¹ which effectively makes cost scale with MW to the 0.8 power ($MW \cdot MW^{-0.2}$). This scaling factor is similar to the one used in the NETL cost model of EPA-600/R-00-083 which scaled cost with respect to gas flow rate to the 0.80 power.

For the ID fan, fan-motor, associated electrical, foundations and ductwork for the PJFF, an estimate of \$5/kW based on a ~500 MW plant is assumed, making the algorithm:

$$RDF \cdot MW \cdot 5000 \cdot (MW/500)^{-0.2}$$

ECO

$$(RDF/1.1) \cdot MW \cdot 200000 \cdot (MW/510)^{-0.20}$$

These costs include general facilities, engineering, contingency, owner’s costs, such as inventory and prepaid royalties, etc., because they are based on a \$200/kW estimate for a 510 MW plant that included such costs. The \$200/kW estimate also included a retrofit difficulty factor of about 1.1, which is why RDF is divided by this amount. It was assumed that cost scales with MW to the (0.8) power, or that \$/kW scales to MW to the -0.2 power. This scaling was confirmed with the technology supplier as being reasonable.² Because there has only been one full-scale, comprehensive cost analysis published on this process and no full-scale commercial system built, this should be regarded as a very preliminary estimate.

Advanced Dry FGD

The cost of an advanced Dry FGD Process Equipment is estimated with the following algorithm

$$RDF \cdot (104000) \cdot MW \cdot (MW/500)^{-0.2}$$

This is based upon an estimate provided in Section 4.2.2 and a scaling exponent of -0.20 is applied to the \$/kW basis (cost scales with MW to the 0.8 power). Since a fabric filter is a significant part of the cost of Advanced Dry FGD, it is reasonable to assume that it scales in a similar manner.

CEMS Upgrade

The total cost for a CEMS upgrade to permit mercury control is the following (from the NETL cost model of EPA-600/R-00-083)

² Personal Communication by telephone with Phil Boyle of Powerspan, 6/16/03

$$\text{CEMS Upgrade} = 10000 \times (\text{MW}/290.4)^{0.75} \cdot 2.2 \cdot 1.07$$

MW = Power Plant Application Net Capacity, MW_{e,net}

General Facilities Costs are added to Process Capital Cost to address roadways, buildings, etc, that are necessary to support the new equipment. This is typically taken as a percentage of Process Capital and 5 percent is used in this effort.

Engineering and Construction Management addresses the costs of engineering the project and managing the erection. The value of 10 percent of Process Capital and General Facilities was used in most cases.

Owner's Costs – these are owners overhead costs, assumed to be 5 percent of Process Capital and General Facilities.

Inventory and Prepaid Royalties is for initial inventory of reagents and parts and any technology royalties that are paid up front. For most cases this was assumed to be equal to 1% of Process Capital.

Contingency is for costs not included in the other costs, a general contingency of 15 or 20 percent of Process Capital and General Facilities was applied to allow for both Process Contingency and Project Contingency. 20 percent was used for PAC injection and 15 percent was used for the more developed technologies, such as PJFF and Advanced, Dry FGD.

Using the percentages shown, the above five items would add about 36 percent to the installed process capital to arrive at the total plant cost. However, as noted earlier, in some cases the estimates we used for Process Capital already included some of these effects.

Total Cash Expended and the **Allowance for Funds Used During Construction** address the de-escalation of construction costs to arrive at the actual money spent and the bank interest charged for construction loans over the project period, respectively. While these can be significant for long projects that extend several years, these effects are usually small adjustments for projects which extend only 1 to 2 years. These two items also counter-act one other. So, the net effect of these items on total cost is fairly small for most of the cases considered here. However, they are included in the analysis. For all technologies except the PAC sorbent injection system, a two-year construction period is assumed. A one-year construction period is assumed for the PAC injection system.

TCE Factor is multiplied by Total Plant Cost to arrive at Total Cash Expended (TCE).

AFDC Factor is multiplied by Total Plant Cost to arrive at the Allowance for Funds used During Construction (AFDC).

TCE is added to AFDC to arrive at the Total Capital Requirement.

The following factors are used to determine Allowance for Funds used During Construction (AFDC) and Total Cash Expended (TCE).

	AFDC	TCE
<u>Years</u>	<u>Factor</u>	<u>Factor</u>
1	0.0000	1.0000
2	0.0524	0.9854
3	0.1065	0.9712
4	0.1623	0.9572
5	0.2199	0.9434

1.3. Operation and Maintenance (O&M) Costs

Operating and Maintenance costs are the ongoing costs associated with using the technology. Included in Operating & Maintenance costs are:

Fixed O&M – Labor for operators, maintenance, training, spare parts, etc. Where information is available, operator and maintenance man-hours are included. In other cases, this is treated as a percentage of process capital per annum (typically about 1.5 percent unless otherwise stated). Parts and general maintenance are treated as a percentage of process capital per annum. Sections 4.3.1 and 4.3.2 describe the Fixed O&M assumptions for each technology.

Variable O&M – This is usually dominated by consumables, such as reagents (PAC, lime, limestone, etc.), water, power requirement, etc. These are estimated according to relationships described in Sections 4.1.2, 4.2.1 and 4.2.2.

Consumable values are specified in the Plant Configuration Sheet. The O&M cost consists of the following consumable components:

Water (for flue gas humidification), gallons/Hr: unit cost = \$/1000 lb (e.g., 0.05) specified in Plant Configuration Sheet

Sorbent (e.g., Activated Carbon), tons /Hr: unit cost = \$/ton (e.g. \$1,000), specified in Plant Configuration Sheet

Lime Cost: unit cost = \$/ton (e.g. \$65), specified in Plant Configuration Sheet

Limestone Cost: unit cost = \$/ton (e.g. \$15), specified in Plant Configuration Sheet

Ammonia unit cost = \$/ton (e.g. \$200), specified in Plant Configuration Sheet

ECO Specialty Chemicals unit cost = \$/ton of pollutant removed (e.g. \$150/ ton of NO_x removed and \$15/ton of SO₂ removed), specified in Plant Configuration Sheet

Fertilizer Product unit cost = \$/ton (e.g. \$110), specified in Plant Configuration Sheet

Incremental Power: unit cost = \$/MW-h (e.g., 25), specified in Plant Configuration Sheet

Fan power accounts for the added pressure drop across the mercury control equipment, such as the fabric filter. Sorbent injection system power is required to transport the sorbent to the flue gas duct. ECO reactor power also consumes significant power and is given an individual line item on the ECO Performance and Cost Worksheet. Humidification system power is required to pump water to an injection grid in the ductwork.

Waste Disposal: unit cost = \$/ton (e.g., 30), specified in Plant Configuration Sheet

Waste activated carbon is generated by the mercury control system. This mercury-laden AC must be disposed of or processed for mercury removal and recovery. This material can be disposed of with the rest of the plant's fly ash or it can be processed separately if deemed a hazardous material.

Other O&M Cost Parameter Values

Operating Labor Rate (base)	\$30/h
Plant Capacity Factor	65 percent

The total cost of control must account for the total capital requirement (expressed as \$/kW) and the total operating and maintenance expenses (expressed as mills/kWh). In order to calculate an annualized cost that accounts for both of these, the capital requirement is annuitized via use of the "Levelized Carrying Charge Rate." The Levelized Carrying Charge Rate assumes a 30-year operating period and accounts for return on debt, return on equity, income taxes, book depreciation, property tax, and insurance payments. The Levelized Carrying Charge Rate is multiplied times the total system capital requirement to derive the annualized capital charge value and converted to units of mills/kWh based on the annual operating hours of the plant (capacity factor x 8,760 h/yr). In this work the Levelized Carrying Charge Rate for a 30 year constant dollar analysis is assumed to be 0.133 (or 13.3 percent). This is consistent with the 30-year Constant Dollar Levelized Carrying Charge Fraction used in previous work and described in EPA-600/R-00-083, Performance and Cost of Mercury Emission Control Technology Applications on Electric Utility Boilers.

The first-year O&M costs that are calculated are also levelized in order to account for both apparent and real escalation rates of labor, materials, and consumables over the expected operating time period (e.g., 30 years). Because in this study we assume that the escalation costs of the O&M components equal the general rate of inflation, and because we are working on a constant dollars basis (2003 dollars), the levelization factor for O&M charges is equal to 1.0.

The levelized carrying charge and the levelized O&M are summed to yield a total annualized cost which is divided by the annual power generation to yield a cost in terms of \$/MWh or mills/kWh (note that these are equal to each other).

Appendix B

Description of PAC Injection Algorithms Used in the Mercury and Multipollutant Control Performance and Cost Model

Description of PAC Injection Algorithms Used in the Mercury Control Performance and Cost Model

The following equation:

$$M = [\max(0.2, \{[A/((100 \cdot D) - \eta)]^{(1/C)}\}) - B]$$

was used to characterize PAC injection concentration (M, in lb/10⁶ ACFM) as a function of mercury removal fraction attributable to PAC (η). This is Equation 9 from Section 4.1.2 with the sole difference that a minimum injection concentration of 0.2 lb/MMacf was selected whenever PAC injection was determined to be necessary. Equation 9 was curve fit against measured data to provide good correspondence with measured full-scale results. See footnote 1. The curve fitting effort produced the constants A, B, C, and D. For very low mercury removal rates – below that of the measured results – errors could result such as zeroing or even negative numbers unless a minimum is set. Therefore, this minimum was to avoid zeroing of the algorithm at low removal rates, and only has an effect for low injection rates that are rarely of interest. In most cases where PAC injection is necessary, this minimum will not apply because greater than 0.2 lb/MMacf results from Equation 9. In the worksheet, the constants A, B, C, and D are selected according to five parameters that form a five-digit “Matching Key”. The parameters are associated with the type of existing particulate control, the existing SO₂ control, fuel type, retrofit equipment (whether or not a fabric filter is retrofit) and the PAC absorption characteristics (low, medium, or high). Constants A, B, C, and D are described in the table below for each “Matching Key #”.

For all results shown in this report, medium PAC capacity was selected. Based upon analysis of full-scale test results by Staudt, et al,¹ PAC selection appears to have an effect only when no downstream fabric filter is used (i.e., PAC is collected in an ESP). The paper by Staudt, et al. indicates three different algorithms for PAC injection upstream of an ESP. The algorithms are associated with different PAC sorbents. In the work here, the middle-performing sorbent was designated “medium”, the high-performing sorbent was designated “high” and so on.

PAC Inj Equation Constants									
Match Key #	Exist Equip	Coal	FF Retro	PAC Cap.	Matching Key	A	B	C	D
10101	FF na	Bituminous	no	high	FF na Bituminous high no	53.00	0.10	2.00	100.0%
10102	FF na	Bituminous	no	med	FF na Bituminous med no	53.00	0.10	2.00	100.0%
10103	FF na	Bituminous	no	low	FF na Bituminous low no	53.00	0.10	2.00	100.0%
10111	FF na	Bituminous	FF	high	FF na Bituminous high FF	53.00	0.10	2.00	100.0%
10112	FF na	Bituminous	FF	med	FF na Bituminous med FF	53.00	0.10	2.00	100.0%
10113	FF na	Bituminous	FF	low	FF na Bituminous low FF	53.00	0.10	2.00	100.0%
10201	FF na	Subbituminous	no	high	FF na Subbituminous high no	160.00	1.00	2.00	100.0%
10202	FF na	Subbituminous	no	med	FF na Subbituminous med no	160.00	1.00	2.00	100.0%
10203	FF na	Subbituminous	no	low	FF na Subbituminous low no	160.00	1.00	2.00	100.0%

¹ Staudt, J.E.; Jozewicz, W.; Srivastava, R. “Modeling Mercury Control with Powdered Activated Carbon”, Presented at the Joint EPRI DOE EPA Combined Utility Air Pollution Control Symposium, The Mega Symposium, May 19-22, 2003, Washington, D.C.

10211	FF na	Subbituminous	FF	high	FF na Subbituminous high FF	160.00	1.00	2.00	100.0%
10212	FF na	Subbituminous	FF	med	FF na Subbituminous med FF	160.00	1.00	2.00	100.0%
10213	FF na	Subbituminous	FF	low	FF na Subbituminous low FF	160.00	1.00	2.00	100.0%
11101	FF FGDw	Bituminous	no	high	FF FGDw Bituminous high no	53.00	0.10	2.00	100.0%
11102	FF FGDw	Bituminous	no	med	FF FGDw Bituminous med no	53.00	0.10	2.00	100.0%
11103	FF FGDw	Bituminous	no	low	FF FGDw Bituminous low no	53.00	0.10	2.00	100.0%
11111	FF FGDw	Bituminous	FF	high	FF FGDw Bituminous high FF	53.00	0.10	2.00	100.0%
11112	FF FGDw	Bituminous	FF	med	FF FGDw Bituminous med FF	53.00	0.10	2.00	100.0%
11113	FF FGDw	Bituminous	FF	low	FF FGDw Bituminous low FF	53.00	0.10	2.00	100.0%
11201	FF FGDw	Subbituminous	no	high	FF FGDw Subbituminous high no	160.00	1.00	2.00	100.0%
11202	FF FGDw	Subbituminous	no	med	FF FGDw Subbituminous med no	160.00	1.00	2.00	100.0%
11203	FF FGDw	Subbituminous	no	low	FF FGDw Subbituminous low no	160.00	1.00	2.00	100.0%
11211	FF FGDw	Subbituminous	FF	high	FF FGDw Subbituminous high FF	160.00	1.00	2.00	100.0%
11212	FF FGDw	Subbituminous	FF	med	FF FGDw Subbituminous med FF	160.00	1.00	2.00	100.0%
11213	FF FGDw	Subbituminous	FF	low	FF FGDw Subbituminous low FF	160.00	1.00	2.00	100.0%
12101	FF SD	Bituminous	no	high	FF SD Bituminous high no	300.00	3.00	0.80	113.0%
12102	FF SD	Bituminous	no	med	FF SD Bituminous med no	300.00	1.50	0.80	109.0%
12103	FF SD	Bituminous	no	low	FF SD Bituminous low no	300.00	0.00	0.80	105.0%
12111	FF SD	Bituminous	FF	high	FF SD Bituminous high FF	53.00	0.10	2.00	100.0%
12112	FF SD	Bituminous	FF	med	FF SD Bituminous med FF	53.00	0.10	2.00	100.0%
12113	FF SD	Bituminous	FF	low	FF SD Bituminous low FF	53.00	0.10	2.00	100.0%
12201	FF SD	Subbituminous	no	high	FF SD Subbituminous high no	150.00	5.00	1.00	72.0%
12202	FF SD	Subbituminous	no	med	FF SD Subbituminous med no	145.00	3.50	1.05	70.1%
12203	FF SD	Subbituminous	no	low	FF SD Subbituminous low no	140.00	1.00	1.00	69.0%
12211	FF SD	Subbituminous	FF	high	FF SD Subbituminous high FF	160.00	1.00	2.00	100.0%
12212	FF SD	Subbituminous	FF	med	FF SD Subbituminous med FF	160.00	1.00	2.00	100.0%
12213	FF SD	Subbituminous	FF	low	FF SD Subbituminous low FF	160.00	1.00	2.00	100.0%
20101	ESPc na	Bituminous	no	high	ESPc na Bituminous high no	300.00	3.00	0.80	113.0%
20102	ESPc na	Bituminous	no	med	ESPc na Bituminous med no	300.00	1.50	0.80	109.0%
20103	ESPc na	Bituminous	no	low	ESPc na Bituminous low no	300.00	0.00	0.80	105.0%
20111	ESPc na	Bituminous	FF	high	ESPc na Bituminous high FF	53.00	0.10	2.00	100.0%
20112	ESPc na	Bituminous	FF	med	ESPc na Bituminous med FF	53.00	0.10	2.00	100.0%
20113	ESPc na	Bituminous	FF	low	ESPc na Bituminous low FF	53.00	0.10	2.00	100.0%
20201	ESPc na	Subbituminous	no	high	ESPc na Subbituminous high no	150.00	5.00	1.00	72.0%
20202	ESPc na	Subbituminous	no	med	ESPc na Subbituminous med no	145.00	3.50	1.05	70.1%
20203	ESPc na	Subbituminous	no	low	ESPc na Subbituminous low no	140.00	1.00	1.00	69.0%
20211	ESPc na	Subbituminous	FF	high	ESPc na Subbituminous high FF	160.00	1.00	2.00	100.0%
20212	ESPc na	Subbituminous	FF	med	ESPc na Subbituminous med FF	160.00	1.00	2.00	100.0%
20213	ESPc na	Subbituminous	FF	low	ESPc na Subbituminous low FF	160.00	1.00	2.00	100.0%
21101	ESPc FGDw	Bituminous	no	high	ESPc FGDw Bituminous high no	300.00	3.00	0.80	113.0%
21102	ESPc FGDw	Bituminous	no	med	ESPc FGDw Bituminous med no	300.00	1.50	0.80	109.0%
21103	ESPc FGDw	Bituminous	no	low	ESPc FGDw Bituminous low no	300.00	0.00	0.80	105.0%
21111	ESPc FGDw	Bituminous	FF	high	ESPc FGDw Bituminous high FF	53.00	0.10	2.00	100.0%
21112	ESPc FGDw	Bituminous	FF	med	ESPc FGDw Bituminous med FF	53.00	0.10	2.00	100.0%
21113	ESPc FGDw	Bituminous	FF	low	ESPc FGDw Bituminous low FF	53.00	0.10	2.00	100.0%
21201	ESPc FGDw	Subbituminous	no	high	ESPc FGDw Subbituminous high no	150.00	5.00	1.00	72.0%
21202	ESPc FGDw	Subbituminous	no	med	ESPc FGDw Subbituminous med no	145.00	3.50	1.05	70.1%
21203	ESPc FGDw	Subbituminous	no	low	ESPc FGDw Subbituminous low no	140.00	1.00	1.00	69.0%
21211	ESPc FGDw	Subbituminous	FF	high	ESPc FGDw Subbituminous high FF	160.00	1.00	2.00	100.0%
21212	ESPc FGDw	Subbituminous	FF	med	ESPc FGDw Subbituminous med FF	160.00	1.00	2.00	100.0%
21213	ESPc FGDw	Subbituminous	FF	low	ESPc FGDw Subbituminous low FF	160.00	1.00	2.00	100.0%

22101	ESPc SD	Bituminous	no	high	ESPc SD Bituminous high no	300.00	3.00	0.80	113.0%
22102	ESPc SD	Bituminous	no	med	ESPc SD Bituminous med no	300.00	1.50	0.80	109.0%
22103	ESPc SD	Bituminous	no	low	ESPc SD Bituminous low no	300.00	0.00	0.80	105.0%
22111	ESPc SD	Bituminous	FF	high	ESPc SD Bituminous high FF	53.00	0.10	2.00	100.0%
22112	ESPc SD	Bituminous	FF	med	ESPc SD Bituminous med FF	53.00	0.10	2.00	100.0%
22113	ESPc SD	Bituminous	FF	low	ESPc SD Bituminous low FF	53.00	0.10	2.00	100.0%
22201	ESPc SD	Subbituminous	no	high	ESPc SD Subbituminous high no	150.00	5.00	1.00	72.0%
22202	ESPc SD	Subbituminous	no	med	ESPc SD Subbituminous med no	145.00	3.50	1.05	70.1%
22203	ESPc SD	Subbituminous	no	low	ESPc SD Subbituminous low no	140.00	1.00	1.00	69.0%
22211	ESPc SD	Subbituminous	FF	high	ESPc SD Subbituminous high FF	160.00	1.00	2.00	100.0%
22212	ESPc SD	Subbituminous	FF	med	ESPc SD Subbituminous med FF	160.00	1.00	2.00	100.0%
22213	ESPc SD	Subbituminous	FF	low	ESPc SD Subbituminous low FF	160.00	1.00	2.00	100.0%
30101	ESPh na	Bituminous	no	high	ESPh na Bituminous high no	300.00	3.00	0.80	113.0%
30102	ESPh na	Bituminous	no	med	ESPh na Bituminous med no	300.00	1.50	0.80	109.0%
30103	ESPh na	Bituminous	no	low	ESPh na Bituminous low no	300.00	0.00	0.80	105.0%
30111	ESPh na	Bituminous	FF	high	ESPh na Bituminous high FF	53.00	0.10	2.00	100.0%
30112	ESPh na	Bituminous	FF	med	ESPh na Bituminous med FF	53.00	0.10	2.00	100.0%
30113	ESPh na	Bituminous	FF	low	ESPh na Bituminous low FF	53.00	0.10	2.00	100.0%
30201	ESPh na	Subbituminous	no	high	ESPh na Subbituminous high no	150.00	5.00	1.00	72.0%
30202	ESPh na	Subbituminous	no	med	ESPh na Subbituminous med no	145.00	3.50	1.05	70.1%
30203	ESPh na	Subbituminous	no	low	ESPh na Subbituminous low no	140.00	1.00	1.00	69.0%
30211	ESPh na	Subbituminous	FF	high	ESPh na Subbituminous high FF	160.00	1.00	2.00	100.0%
30212	ESPh na	Subbituminous	FF	med	ESPh na Subbituminous med FF	160.00	1.00	2.00	100.0%
30213	ESPh na	Subbituminous	FF	low	ESPh na Subbituminous low FF	160.00	1.00	2.00	100.0%
31111	ESPh FGDw	Bituminous	FF	high	ESPh FGDw Bituminous high FF	53.00	0.10	2.00	100.0%
31112	ESPh FGDw	Bituminous	FF	med	ESPh FGDw Bituminous med FF	53.00	0.10	2.00	100.0%
31113	ESPh FGDw	Bituminous	FF	low	ESPh FGDw Bituminous low FF	53.00	0.10	2.00	100.0%
31211	ESPh FGDw	Subbituminous	FF	high	ESPh FGDw Subbituminous high FF	160.00	1.00	2.00	100.0%
31212	ESPh FGDw	Subbituminous	FF	med	ESPh FGDw Subbituminous med FF	160.00	1.00	2.00	100.0%
31213	ESPh FGDw	Subbituminous	FF	low	ESPh FGDw Subbituminous low FF	160.00	1.00	2.00	100.0%

Appendix C

Summary of Mercury Control Cases Analyzed

Summary of Mercury Control Cases Analyzed

The following table summarizes the cases evaluated. For each model plant evaluated with PAC injection, 50, 60, 70, 80, and 90 percent reduction cases were evaluated. For multipollutant control technologies ECO and Advanced Dry FGD, which are not “dial up” mercury control technologies that enable variation of mercury control levels, only one mercury control level was evaluated.

Table 2. Mercury control technology applications and co-benefits.

Model Plant	Size (MW)	Coal		Existing Controls		Additional Controls	Co-benefit Cases(s) with
		Type ^a	%S	Tech	Hg redn*		
1	975	Bit	3	ESP + FGD	*	PAC, PAC+PJFF	SCR
2	975	Bit	3	FF + FGD	*	PAC, PAC+PJFF	SCR
3	975	Bit	3	ESPh + FGD	*	PAC, PAC+PJFF	SCR
4	975	Bit	3	ESP	*	Adv Dry FGD	SCR
5	975	Bit	3	ESP	*	ECO	
6	300	Bit	3	ESP + FGD	*	PAC, PAC+PJFF	SCR
7	300	Bit	3	FF + FGD	*	PAC, PAC+PJFF	SCR
8	300	Bit	3	ESPh + FGD	*	PAC, PAC+PJFF	SCR
9	300	Bit	3	ESP	*	Adv Dry FGD	SCR
10	300	Bit	3	ESP + ECO	*	ECO	
11	975	Bit	0.6	ESP	*	PAC, PAC+PJFF	
12	975	Bit	0.6	FF	*	PAC, PAC+PJFF	
13	975	Bit	0.6	ESPh	*	PAC+PJFF	
14	975	Bit	0.6	ESP	*	ECO	
15	975	Bit	0.6	FF	*	ECO	
16	975	Bit	0.6	ESPh	*	ECO	
17	975	Bit	0.6	ESP	*	Adv Dry FGD	
18	975	Bit	0.6	FF	*	Adv Dry FGD	
19	975	Bit	0.6	ESPh	*	Adv Dry FGD	
20	975	Subbit	0.5	ESP	*	PAC, PAC+PJFF	
21	975	Subbit	0.5	FF	*	PAC, PAC+PJFF	
22	975	Subbit	0.5	ESPh	*	PAC+PJFF	
23	975	Subbit	0.5	ESP	*	ECO	

24	975	Subbit	0.5	FF	*	ECO	
25	975	Subbit	0.5	ESPh	*	ECO	
26	100	Bit	3	SD + ESP	*	PAC, PAC+PJFF	
27	100	Bit	3	SD + FF	*	PAC, PAC+PJFF	
28	100	Bit	3	ESPh + FGD	*	PAC+PJFF	
29	100	Bit	0.6	ESP	*	PAC, PAC+PJFF	
30	100	Bit	0.6	FF	*	PAC, PAC+PJFF	
31	100	Bit	0.6	ESPh	*	PAC+PJFF	
32	100	Bit	0.6	ESP	*	ECO	
33	100	Bit	0.6	FF	*	ECO	
34	100	Bit	0.6	ESPh	*	ECO	
35	100	Bit	0.6	ESP	*	Adv Dry FGD	
36	100	Bit	0.6	FF	*	Adv Dry FGD	
37	100	Bit	0.6	ESPh	*	Adv Dry FGD	
38	100	Subbit	0.5	ESP	*	PAC, PAC+PJFF	
39	100	Subbit	0.5	FF	*	PAC, PAC+PJFF	
40	100	Subbit	0.5	ESPh	*	PAC+PJFF	
41	100	Subbit	0.5	ESP	*	ECO	
42	100	Subbit	0.5	FF	*	ECO	
43	100	Subbit	0.5	ESPh	*	ECO	
44	975	K-Fuel	0.4	ESP	*	PAC, PAC+PJFF	
45	975	K-Fuel	0.4	FF	*	PAC, PAC+PJFF	
46	975	K-Fuel	0.4	ESPh	*	PAC+PJFF	
47	100	K-Fuel	0.4	ESP	*	PAC, PAC+PJFF	
48	100	K-Fuel	0.4	FF	*	PAC, PAC+PJFF	
49	100	K-Fuel	0.4	ESPh	*	PAC+PJFF	

a. Bit = bituminous coal; Subbit = subbituminous coal.

* Hg reduction from existing controls to be determined by algorithm

Appendix D

Results of Model Runs

Model Plant 1

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		67.7%	67.7%	67.7%	67.7%	67.7%
Hg reduction by PAC		none	none	7.3%	38.2%	69.1%
Total Hg Out	mg/MWh	12.2	12.2	11.3	7.5	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$0.094	\$1.601	\$2.437	\$4.304
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.037	0.057	0.101
Fixed O&M Charge	mills/kWh	0.001	0.001	0.010	0.015	0.027
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	1.195	1.447	2.175
Total Cost	mills/kWh	0.003	0.003	1.242	1.520	2.303
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.094	\$0.094	\$36.216	\$36.322	\$36.538
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.846	0.848	0.853
Fixed O&M Charge	mills/kWh	0.001	0.001	0.061	0.062	0.063
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.215	0.234	0.278
Total Cost	mills/kWh	0.003	0.003	1.122	1.144	1.195

Model Plant 1 SCR Co-benefit

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		1	1	1	1	1
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		90.0%	90.0%	90.0%	90.0%	90.0%
Hg reduction by PAC		none	none	none	none	none
Total Hg Out	mg/MW	3.8	3.8	3.8	3.8	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$0.094	\$0.094	\$0.094	\$0.094
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.002	0.002	0.002
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.003	0.003	0.003	0.003	0.003

Model Plant 2

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		96.0%	96.0%	96.0%	96.0%	96.0%
Hg reduction by PAC		none	none	none	none	none
Total Hg Out	mg/MWh	1.5	1.5	1.5	1.5	1.5
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$0.094	\$0.094	\$0.094	\$0.094
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.002	0.002	0.002
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.003	0.003	0.003	0.003	0.003

Model Plant 2 SCR Co-benefit

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		1	1	1	1	1
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		96.0%	96.0%	96.0%	96.0%	96.0%
Hg reduction by PAC		none	none	none	none	none
Total Hg Out	mg/MWh	1.5	1.5	1.5	1.5	1.5
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$0.094	\$0.094	\$0.094	\$0.094
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.002	0.002	0.002
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.003	0.003	0.003	0.003	0.003

Model Plant 3

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP hot side		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		65.0%	65.0%	65.0%	65.0%	65.0%
Hg reduction by PAC		none	none	14.3%	42.9%	71.4%
Total Hg Out	mg/MWh	13.2	13.2	11.3	7.5	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.094	\$0.094	\$36.236	\$36.345	\$36.566
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.846	0.849	0.854
Fixed O&M Charge	mills/kWh	0.001	0.001	0.061	0.062	0.063
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.218	0.239	0.284
Total Cost	mills/kWh	0.003	0.003	1.126	1.149	1.201

Model Plant 3 SCR Co-benefit

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		1	1	1	1	1
FF		0	0	0	0	0
ESP hot side		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		90.0%	90.0%	90.0%	90.0%	90.0%
Hg reduction by PAC		none	none	none	none	none
Total Hg Out	mg/MWh	3.8	3.8	3.8	3.8	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$0.094	\$0.094	\$0.094	\$0.094
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.002	0.002	0.002
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.003	0.003	0.003	0.003	0.003

Model Plant 4

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFGD		1	1	1	1	1
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg Reduction of Existing Equipment		29.4%	29.4%	29.4%	29.4%	29.4%
Hg Reduction of AdvDryFGD		95.0%	95.0%	95.0%	95.0%	95.0%
Total Hg Removal		96.5%	96.5%	96.5%	96.5%	96.5%
Outlet Hg	mg/MWh	1.327	1.327	1.327	1.327	1.327
Capital Cost	\$/kW	\$115.46	\$129.80	\$144.23	\$158.65	\$173.07
Levelized capital carrying charge (const \$)	mills/kWh	2.009	2.258	2.509	2.760	3.011
Fixed O&M Charge	mills/kWh	0.608	0.684	0.760	0.836	0.912
Variable O&M Charge (including consumables)	mills/kWh	5.323	5.323	5.323	5.323	5.323
Total Cost	mills/kWh	7.940	8.265	8.592	8.919	9.246
Sensitivity with respect to reagent cost						
Capital Cost	\$/kW	\$144.33	\$144.23	\$144.23	\$144.23	\$144.23
Levelized capital carrying charge (const \$)	mills/kWh	2.511	2.509	2.509	2.509	2.509
Fixed O&M Charge	mills/kWh	0.760	0.760	0.760	0.760	0.760
Variable O&M Charge (including consumables)	mills/kWh	4.646	4.985	5.323	5.661	5.999
Total Cost	mills/kWh	7.918	8.254	8.592	8.930	9.268
Reagent Cost	\$/ton	\$45	\$55	\$65	\$75	\$85

Model Plant 5

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	29.4%	29.4%	29.4%	29.4%	29.4%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	89.4%	89.4%	89.4%	89.4%	89.4%
Outlet Hg	mg/MWh	3.98	3.98	3.98	3.98	3.98
ECO, including CEMS, sensitivity to fertilizer value						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	1.242	0.211	-0.820	-1.851	-2.883
Total Cost	mills/kWh	6.315	5.284	4.252	3.221	2.190
ECO, including CEMS, sensitivity to power value						
Value of Power	mills/KWh	20	25	30	35	40
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	-1.128	-0.820	-0.513	-0.205	0.103
Total Cost	mills/kWh	3.945	4.252	4.560	4.868	5.175
ECO, including CEMS, sensitivity with respect to capital cost						
Capital Cost	\$/kW	\$150.28	\$169.05	\$187.83	\$206.60	\$225.38
Levelized capital carrying charge (const \$)	mills/kWh	3.510	3.949	4.387	4.826	5.264
Fixed O&M Charge	mills/kWh	0.586	0.636	0.685	0.735	0.784
Variable O&M Charge (including consumables)	mills/kWh	-0.820	-0.820	-0.820	-0.820	-0.820
Total Cost	mills/kWh	3.276	3.764	4.252	4.740	5.228

Model Plant 6

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		300	300	300	300	300
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		67.7%	67.7%	67.7%	67.7%	67.7%
Hg reduction by PAC		none	none	7.3%	38.2%	69.1%
Total Hg Out	mg/MWh	12.2	12.2	11.3	7.5	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.126	\$0.126	\$2.370	\$3.600	\$6.330
Levelized capital carrying charge (const \$)	mills/kWh	0.003	0.003	0.055	0.084	0.148
Fixed O&M Charge	mills/kWh	0.001	0.001	0.015	0.023	0.040
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	1.195	1.447	2.175
Total Cost	mills/kWh	0.004	0.004	1.265	1.554	2.363
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.126	\$0.126	\$45.989	\$46.147	\$46.467
Levelized capital carrying charge (const \$)	mills/kWh	0.003	0.003	1.074	1.078	1.085
Fixed O&M Charge	mills/kWh	0.001	0.001	0.063	0.064	0.066
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.215	0.234	0.278
Total Cost	mills/kWh	0.004	0.004	1.352	1.376	1.430

Model Plant 6 SCR Co-benefit

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		300	300	300	300	300
Existing Technologies						
SCR		1	1	1	1	1
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		90%	90%	90%	90%	90%
Hg reduction by PAC		none	none	none	none	none
Total Hg Out	mg/MWh	3.8	3.8	3.8	3.8	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		No	no	no	no	no
Capital Cost	\$/kW	\$0.126	\$0.126	\$0.126	\$0.126	\$0.126
Levelized capital carrying charge (const \$)	mills/kWh	0.003	0.003	0.003	0.003	0.003
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.004	0.004	0.004	0.004	0.004

Model Plant 7

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		300	300	300	300	300
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		96.0%	96.0%	96.0%	96.0%	96.0%
Hg reduction by PAC		none	none	none	none	none
Total Hg Out	mg/MWh	1.5	1.5	1.5	1.5	1.5
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.126	\$0.126	\$0.126	\$0.126	\$0.126
Levelized capital carrying charge (const \$)	mills/kWh	0.003	0.003	0.003	0.003	0.003
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.004	0.004	0.004	0.004	0.004
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.126	\$0.126	\$0.126	\$0.126	\$0.126
Levelized capital carrying charge (const \$)	mills/kWh	0.003	0.003	0.003	0.003	0.003
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.004	0.004	0.004	0.004	0.004

Model Plant 7 SCR Co-benefit

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		300	300	300	300	300
Existing Technologies						
SCR		1	1	1	1	1
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		96.0%	96.0%	96.0%	96.0%	96.0%
Hg reduction by PAC		none	none	none	none	none
Total Hg Out	mg/MWh	1.5	1.5	1.5	1.5	1.5
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.126	\$0.126	\$0.126	\$0.126	\$0.126
Levelized capital carrying charge (const \$)	mills/kWh	0.003	0.003	0.003	0.003	0.003
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.004	0.004	0.004	0.004	0.004

Model Plant 8

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		300	300	300	300	300
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP hot side		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		65.0%	65.0%	65.0%	65.0%	65.0%
Hg reduction by PAC		none	none	14.3%	42.9%	71.4%
Total Hg Out	mg/MWh	13.2	13.2	11.3	7.5	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.126	\$0.126	\$46.018	\$46.180	\$46.508
Levelized capital carrying charge (const \$)	mills/kWh	0.003	0.003	1.075	1.079	1.086
Fixed O&M Charge	mills/kWh	0.001	0.001	0.063	0.064	0.067
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.218	0.239	0.284
Total Cost	mills/kWh	0.004	0.004	1.357	1.382	1.437

Model Plant 8 SCR Co-benefit

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		300	300	300	300	300
Existing Technologies						
SCR		1	1	1	1	1
FF		0	0	0	0	0
ESP hot side		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		90%	90%	90%	90%	90%
Hg reduction by PAC		none	none	none	none	none
Total Hg Out	mg/MWh	3.8	3.8	3.8	3.8	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.126	\$0.126	\$0.126	\$0.126	\$0.126
Levelized capital carrying charge (const \$)	mills/kWh	0.003	0.003	0.003	0.003	0.003
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.001
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.000
Total Cost	mills/kWh	0.004	0.004	0.004	0.004	0.004

Model Plant 9

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		300	300	300	300	300
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFGD		1	1	1	1	1
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg Reduction of Existing Equipment		29.4%	29.4%	29.4%	29.4%	29.4%
Hg Reduction of AdvDryFGD		95.0%	95.0%	95.0%	95.0%	95.0%
Total Hg Removal		96.5%	96.5%	96.5%	96.5%	96.5%
Outlet Hg	mg/MWh	1.327	1.327	1.327	1.327	1.327
Capital Cost	\$/kW	\$127.47	\$143.30	\$159.23	\$175.15	\$191.07
Levelized capital carrying charge (const \$)	mills/kWh	2.218	2.493	2.770	3.047	3.324
Fixed O&M Charge	mills/kWh	0.672	0.755	0.839	0.923	1.007
Variable O&M Charge (including consumables)	mills/kWh	5.323	5.323	5.323	5.323	5.323
Total Cost	mills/kWh	8.212	8.571	8.932	9.293	9.654
Sensitivity with respect to reagent cost						
Capital Cost	\$/kW	\$159.34	\$159.23	\$159.23	\$159.23	\$159.23
Levelized capital carrying charge (const \$)	mills/kWh	2.772	2.770	2.770	2.770	2.770
Fixed O&M Charge	mills/kWh	0.840	0.839	0.839	0.839	0.839
Variable O&M Charge (including consumables)	mills/kWh	4.646	4.985	5.323	5.661	5.999
Total Cost	mills/kWh	8.258	8.594	8.932	9.270	9.608
Reagent Cost	\$/ton	\$45	\$55	\$65	\$75	\$85

Model Plant 10

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		300	300	300	300	300
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	29.4%	29.4%	29.4%	29.4%	29.4%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	89.4%	89.4%	89.4%	89.4%	89.4%
Outlet Hg	mg/MWh	3.98	3.98	3.98	3.98	3.98
Sensitivity with respect to fertilizer cost						
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$237.76	\$237.76	\$237.76	\$237.76	\$237.76
Levelized capital carrying charge (const \$)	mills/kWh	5.554	5.554	5.554	5.554	5.554
Fixed O&M Charge	mills/kWh	1.243	1.243	1.243	1.243	1.243
Variable O&M Charge (including consumables)	mills/kWh	1.242	0.211	-0.820	-1.851	-2.883
Total Cost	mills/kWh	8.039	7.008	5.977	4.946	3.914
Sensitivity with respect to power cost						
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$237.76	\$237.76	\$237.76	\$237.76	\$237.76
Levelized capital carrying charge (const \$)	mills/kWh	5.554	5.554	5.554	5.554	5.554
Fixed O&M Charge	mills/kWh	1.243	1.243	1.243	1.243	1.243
Variable O&M Charge (including consumables)	mills/kWh	-1.128	-0.820	-0.513	-0.205	0.103
Total Cost	mills/kWh	5.669	5.977	6.285	6.592	6.900
Sensitivity with respect to capital cost						
ECO, including CEMS						
Capital Cost	\$/kW	\$190.23	\$214.00	\$237.76	\$261.53	\$285.29
Levelized capital carrying charge (const \$)	mills/kWh	4.443	4.999	5.554	6.109	6.664
Fixed O&M Charge	mills/kWh	1.118	1.181	1.243	1.306	1.369
Variable O&M Charge (including consumables)	mills/kWh	-0.820	-0.820	-0.820	-0.820	-0.820
Total Cost	mills/kWh	4.741	5.359	5.977	6.595	7.212

Model Plant 11

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		50.6%	50.6%	50.6%	50.6%	50.6%
Hg reduction by PAC		none	19.0%	39.2%	59.5%	79.7%
Total Hg Out	mg/MWh	16.601	13.452	10.089	6.726	3.363
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$1.855	\$2.467	\$3.490	\$5.711
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.043	0.058	0.082	0.133
Fixed O&M Charge	mills/kWh	0.001	0.012	0.015	0.022	0.036
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.709	0.901	1.277	2.282
Total Cost	mills/kWh	0.003	0.764	0.974	1.381	2.451
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	yes	yes	yes	yes
Capital Cost	\$/kW	\$0.094	\$36.248	\$36.324	\$36.445	\$36.690
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.847	0.848	0.851	0.857
Fixed O&M Charge	mills/kWh	0.001	0.061	0.062	0.063	0.064
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.220	0.234	0.258	0.311
Total Cost	mills/kWh	0.003	1.128	1.144	1.171	1.233

Model Plant 12

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		85.0%	85.0%	85.0%	85.0%	85.0%
Hg reduction by PAC		none	none	none	none	33.3%
Total Hg Out	mg/MWh	5.0	5.0	5.0	5.0	3.4
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$0.094	\$0.094	\$0.094	\$0.821
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.002	0.002	0.019
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.005
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.458
Total Cost	mills/kWh	0.003	0.003	0.003	0.003	0.482
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	yes
Capital Cost	\$/kW	\$0.094	\$0.094	\$0.094	\$0.094	\$36.299
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.002	0.002	0.848
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.062
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.229
Total Cost	mills/kWh	0.003	0.003	0.003	0.003	1.139

Model Plant 13

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot side)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		25.5%	25.5%	25.5%	25.5%	25.5%
Hg reduction by PAC		32.9%	46.3%	59.7%	73.2%	86.6%
Total Hg Out	mg/MWh	16.8	13.5	10.1	6.7	3.4
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$36.162	\$36.360	\$36.447	\$36.584	\$36.865
Levelized capital carrying charge (const \$)	mills/kWh	0.845	0.849	0.851	0.855	0.861
Fixed O&M Charge	mills/kWh	0.062	0.062	0.063	0.063	0.065
Variable O&M Charge (including consumables)	mills/kWh	0.229	0.241	0.258	0.287	0.353
Total Cost	mills/kWh	1.135	1.152	1.172	1.205	1.280

Model Plant 14

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	50.6%	50.6%	50.6%	50.6%	50.6%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	92.6%	92.6%	92.6%	92.6%	92.6%
Outlet Hg	mg/MWh	2.49	2.49	2.49	2.49	2.49
Sensitivity with respect to fertilizer value						
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	1.659	1.451	1.243	1.035	0.828
Total Cost	mills/kWh	6.731	6.524	6.316	6.108	5.900
Sensitivity with respect to power value						
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.940	1.243	1.546	1.849	2.152
Total Cost	mills/kWh	6.013	6.316	6.619	6.921	7.224
Sensitivity with respect to capital cost						
ECO, including CEMS						
Capital Cost	\$/kW	\$150.28	\$169.05	\$187.83	\$206.60	\$225.38
Levelized capital carrying charge (const \$)	mills/kWh	3.510	3.949	4.387	4.826	5.264
Fixed O&M Charge	mills/kWh	0.586	0.636	0.685	0.735	0.784
Variable O&M Charge (including consumables)	mills/kWh	1.243	1.243	1.243	1.243	1.243
Total Cost	mills/kWh	5.340	5.828	6.316	6.804	7.292

Model Plant 15

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	85.0%	85.0%	85.0%	85.0%	85.0%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	97.8%	97.8%	97.8%	97.8%	97.8%
Outlet Hg	mg/MWh	0.76	0.76	0.76	0.76	0.76
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	1.637	1.429	1.222	1.014	0.806
Total Cost	mills/kWh	6.710	6.502	6.294	6.086	5.879
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.919	1.222	1.524	1.827	2.130
Total Cost	mills/kWh	5.991	6.294	6.597	6.900	7.203
ECO, including CEMS						
Capital Cost	\$/kW	\$150.28	\$169.05	\$187.83	\$206.60	\$225.38
Levelized capital carrying charge (const \$)	mills/kWh	3.510	3.949	4.387	4.826	5.264
Fixed O&M Charge	mills/kWh	0.586	0.636	0.685	0.735	0.784
Variable O&M Charge (including consumables)	mills/kWh	1.222	1.222	1.222	1.222	1.222
Total Cost	mills/kWh	5.318	5.806	6.294	6.782	7.270

Model Plant 16

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	25.5%	25.5%	25.5%	25.5%	25.5%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	88.8%	88.8%	88.8%	88.8%	88.8%
Outlet Hg	mg/MWh	3.76	3.76	3.76	3.76	3.76
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	1.674	1.467	1.259	1.051	0.844
Total Cost	mills/kWh	6.747	6.539	6.332	6.124	5.916
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.956	1.259	1.562	1.865	2.167
Total Cost	mills/kWh	6.029	6.332	6.634	6.937	7.240
ECO, including CEMS						
Capital Cost	\$/kW	\$150.28	\$169.05	\$187.83	\$206.60	\$225.38
Levelized capital carrying charge (const \$)	mills/kWh	3.510	3.949	4.387	4.826	5.264
Fixed O&M Charge	mills/kWh	0.586	0.636	0.685	0.735	0.784
Variable O&M Charge (including consumables)	mills/kWh	1.259	1.259	1.259	1.259	1.259
Total Cost	mills/kWh	5.356	5.844	6.332	6.820	7.308

Model Plant 17

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFGD		1	1	1	1	1
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg Reduction of Existing Equipment		50.6%	50.6%	50.6%	50.6%	50.6%
Hg Reduction of AdvDryFGD		95.0%	95.0%	95.0%	95.0%	95.0%
Total Hg Removal		97.5%	97.5%	97.5%	97.5%	97.5%
Outlet Hg	mg/MWh	0.830	0.830	0.830	0.830	0.830
Capital Cost	\$/kW	\$115.46	\$129.80	\$144.23	\$158.65	\$173.07
Levelized capital carrying charge (const \$)	mills/kWh	2.009	2.258	2.509	2.760	3.011
Fixed O&M Charge	mills/kWh	0.608	0.684	0.760	0.836	0.912
Variable O&M Charge (including consumables)	mills/kWh	1.071	1.071	1.071	1.071	1.071
Total Cost	mills/kWh	3.688	4.013	4.340	4.667	4.994
Capital Cost	\$/kW	\$144.33	\$144.23	\$144.23	\$144.23	\$144.23
Levelized capital carrying charge (const \$)	mills/kWh	2.511	2.509	2.509	2.509	2.509
Fixed O&M Charge	mills/kWh	0.760	0.760	0.760	0.760	0.760
Variable O&M Charge (including consumables)	mills/kWh	0.950	1.010	1.071	1.131	1.192
Total Cost	mills/kWh	4.221	4.280	4.340	4.401	4.461
Reagent Cost	\$/ton	\$45	\$55	\$65	\$75	\$85

Model Plant 18

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFGD		1	1	1	1	1
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg Reduction of Existing Equipment		85.0%	85.0%	85.0%	85.0%	85.0%
Hg Reduction of AdvDryFGD		95.0%	95.0%	95.0%	95.0%	95.0%
Total Hg Removal		99.3%	99.3%	99.3%	99.3%	99.3%
Outlet Hg	mg/MWh	0.252	0.252	0.252	0.252	0.252
Capital Cost	\$/kW	\$115.46	\$129.80	\$144.23	\$158.65	\$173.07
Levelized capital carrying charge (const \$)	mills/kWh	2.009	2.258	2.509	2.760	3.011
Fixed O&M Charge	mills/kWh	0.608	0.684	0.760	0.836	0.912
Variable O&M Charge (including consumables)	mills/kWh	1.072	1.072	1.072	1.072	1.072
Total Cost	mills/kWh	3.689	4.014	4.341	4.668	4.995
Capital Cost	\$/kW	\$144.33	\$144.23	\$144.23	\$144.23	\$144.23
Levelized capital carrying charge (const \$)	mills/kWh	2.511	2.509	2.509	2.509	2.509
Fixed O&M Charge	mills/kWh	0.760	0.760	0.760	0.760	0.760
Variable O&M Charge (including consumables)	mills/kWh	0.951	1.012	1.072	1.132	1.193
Total Cost	mills/kWh	4.223	4.281	4.341	4.402	4.462
Reagent Cost	\$/ton	\$45	\$55	\$65	\$75	\$85

Model Plant 19

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFGD		1	1	1	1	1
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg Reduction of Existing Equipment		25.5%	25.5%	25.5%	25.5%	25.5%
Hg Reduction of AdvDryFGD		95.0%	95.0%	95.0%	95.0%	95.0%
Total Hg Removal		96.3%	96.3%	96.3%	96.3%	96.3%
Outlet Hg	mg/MWh	1.253	1.253	1.253	1.253	1.253
Capital Cost	\$/kW	\$115.46	\$129.80	\$144.23	\$158.65	\$173.07
Levelized capital carrying charge (const \$)	mills/kWh	2.009	2.258	2.509	2.760	3.011
Fixed O&M Charge	mills/kWh	0.608	0.684	0.760	0.836	0.912
Variable O&M Charge (including consumables)	mills/kWh	1.071	1.071	1.071	1.071	1.071
Total Cost	mills/kWh	3.688	4.013	4.340	4.667	4.994
Capital Cost	\$/kW	\$144.33	\$144.23	\$144.23	\$144.23	\$144.23
Levelized capital carrying charge (const \$)	mills/kWh	2.511	2.509	2.509	2.509	2.509
Fixed O&M Charge	mills/kWh	0.760	0.760	0.760	0.760	0.760
Variable O&M Charge (including consumables)	mills/kWh	0.950	1.010	1.071	1.131	1.192
Total Cost	mills/kWh	4.221	4.280	4.340	4.401	4.461
Reagent Cost	\$/ton	\$45	\$55	\$65	\$75	\$85

Model Plant 20

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	
Coal	DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB	
Size (MW)	975	975	975	975	975	
Existing Technologies						
SCR	0	0	0	0	0	
FF	0	0	0	0	0	
ESP	1	1	1	1	1	
SDA	0	0	0	0	0	
LSFO	0	0	0	0	0	
Retrofit Technologies						
PAC	1	1	1	1	1	
AdvDryFDG	0	0	0	0	0	
ECO	0	0	0	0	0	
WESP	0	0	0	0	0	
Hg CEMS	1	1	1	1	1	
Specified Hg reduction	50%	60%	70%	80%	90%	
Hg reduction of existing equipment	29.7%	29.7%	29.7%	29.7%	29.7%	
Desired Hg reduction by PAC	28.9%	43.1%	57.3%	71.5%	85.8%	
Actual Hg reduction by PAC without PJFF*	28.9%	43.1%	57.3%	69.3%	69.3%	
Total Actual Hg Reduction without PJFF*	50.0%	60.0%	70.0%	78.5%	78.5%	
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	
Capital Cost	\$/kW	\$0.401	\$1.238	\$3.232	\$27.744	\$27.744
Levelized capital carrying charge (const \$)	mills/kWh	0.009	0.029	0.075	0.648	0.648
Fixed O&M Charge	mills/kWh	0.003	0.008	0.020	0.174	0.174
Variable O&M Charge (including consumables)	mills/kWh	1.027	1.181	1.811	20.102	20.102
Total Cost	mills/kWh	1.039	1.218	1.907	20.924	20.924
Total Hg Out	mg/MWh	20.1	16.1	12.1	8.7	8.7
*With PAC injection on Subbituminous coals and only an ESP, Hg reduction at very high levels is not possible for this case. Additional PAC injection will not improve Hg reduction.						
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$35.998	\$36.258	\$36.422	\$36.666	\$37.139
Levelized capital carrying charge (const \$)	mills/kWh	0.841	0.847	0.851	0.856	0.867
Fixed O&M Charge	mills/kWh	0.061	0.061	0.062	0.064	0.067
Variable O&M Charge (including consumables)	mills/kWh	0.209	0.231	0.262	0.315	0.435
Total Cost	mills/kWh	1.111	1.139	1.176	1.236	1.369
Total Hg Out	mg/MWh	20.1	16.1	12.1	8.0	4.0

Model Plant 21

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		60.7%	60.7%	60.7%	60.7%	60.7%
Hg reduction by PAC		none	none	23.6%	49.1%	74.5%
Total Hg Out	mg/MWh	15.8	15.8	12.1	8.0	4.0
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$0.094	\$0.616	\$0.842	\$1.259
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.014	0.020	0.029
Fixed O&M Charge	mills/kWh	0.001	0.001	0.004	0.005	0.008
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	1.057	1.097	1.186
Total Cost	mills/KWh	0.003	0.003	1.075	1.122	1.223
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.094	\$0.094	\$36.094	\$36.320	\$36.737
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.843	0.848	0.858
Fixed O&M Charge	mills/kWh	0.001	0.001	0.060	0.062	0.064
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.203	0.243	0.332
Total Cost	mills/kWh	0.003	0.003	1.106	1.153	1.254

Model Plant 22

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		12.6%	12.6%	12.6%	12.6%	12.6%
Hg reduction by PAC		42.8%	54.2%	65.7%	77.1%	88.6%
Total Hg Out	mg/MWh	20.1	16.1	12.1	8.0	4.0
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$36.119	\$36.381	\$36.550	\$36.806	\$37.305
Levelized capital carrying charge (const \$)	mills/kWh	0.844	0.850	0.854	0.860	0.871
Fixed O&M Charge	mills/kWh	0.061	0.062	0.063	0.065	0.068
Variable O&M Charge (including consumables)	mills/kWh	0.230	0.254	0.289	0.348	0.482
Total Cost	mills/kWh	1.135	1.166	1.206	1.273	1.421

Model Plant 23

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	29.7%	29.7%	29.7%	29.7%	29.7%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	89.5%	89.5%	89.5%	89.5%	89.5%
Outlet Hg	mg/MWh	4.24	4.24	4.24	4.24	4.24
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.966	0.704	0.442	0.181	-0.081
Total Cost	mills/kWh	6.038	5.777	5.515	5.253	4.992
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.258	0.442	0.627	0.811	0.995
Total Cost	mills/kWh	5.331	5.515	5.699	5.884	6.068
ECO, including CEMS						
Capital Cost	\$/kW	\$150.28	\$169.05	\$187.83	\$206.60	\$225.38
Levelized capital carrying charge (const \$)	mills/kWh	3.510	3.949	4.387	4.826	5.264
Fixed O&M Charge	mills/kWh	0.586	0.636	0.685	0.735	0.784
Variable O&M Charge (including consumables)	mills/kWh	0.442	0.442	0.442	0.442	0.442
Total Cost	mills/kWh	4.539	5.027	5.515	6.003	6.491

Model Plant 24

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	60.7%	60.7%	60.7%	60.7%	60.7%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	94.1%	94.1%	94.1%	94.1%	94.1%
Outlet Hg	mg/MWh	2.37	2.37	2.37	2.37	2.37
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.942	0.681	0.419	0.158	-0.104
Total Cost	mills/kWh	6.015	5.753	5.492	5.230	4.969
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.235	0.419	0.603	0.788	0.972
Total Cost	mills/kWh	5.308	5.492	5.676	5.860	6.044
ECO, including CEMS						
Capital Cost	\$/kW	\$150.28	\$169.05	\$187.83	\$206.60	\$225.38
Levelized capital carrying charge (const \$)	mills/kWh	3.510	3.949	4.387	4.826	5.264
Fixed O&M Charge	mills/kWh	0.586	0.636	0.685	0.735	0.784
Variable O&M Charge (including consumables)	mills/kWh	0.419	0.419	0.419	0.419	0.419
Total Cost	mills/kWh	4.516	5.004	5.492	5.980	6.468

Model Plant 25

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	12.6%	12.6%	12.6%	12.6%	12.6%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	86.9%	86.9%	86.9%	86.9%	86.9%
Outlet Hg	mg/MWh	5.27	5.27	5.27	5.27	5.27
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.979	0.717	0.455	0.194	-0.068
Total Cost	mills/kWh	6.051	5.790	5.528	5.266	5.005
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$187.83	\$187.83	\$187.83	\$187.83	\$187.83
Levelized capital carrying charge (const \$)	mills/kWh	4.387	4.387	4.387	4.387	4.387
Fixed O&M Charge	mills/kWh	0.685	0.685	0.685	0.685	0.685
Variable O&M Charge (including consumables)	mills/kWh	0.271	0.455	0.640	0.824	1.008
Total Cost	mills/kWh	5.344	5.528	5.712	5.896	6.081
ECO, including CEMS						
Capital Cost	\$/kW	\$150.28	\$169.05	\$187.83	\$206.60	\$225.38
Levelized capital carrying charge (const \$)	mills/kWh	3.510	3.949	4.387	4.826	5.264
Fixed O&M Charge	mills/kWh	0.586	0.636	0.685	0.735	0.784
Variable O&M Charge (including consumables)	mills/kWh	0.455	0.455	0.455	0.455	0.455
Total Cost	mills/kWh	4.552	5.040	5.528	6.016	6.504

Model Plant 26

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		1	1	1	1	1
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		5.0%	5.0%	5.0%	5.0%	5.0%
Hg reduction by PAC		47.4%	57.9%	68.4%	78.9%	89.5%
Total Hg Out	mg/MWh	16.8	13.5	10.1	6.7	3.4
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$6.014	\$7.235	\$8.996	\$11.818	\$17.266
Levelized capital carrying charge (const \$)	mills/kWh	0.140	0.169	0.210	0.276	0.403
Fixed O&M Charge	mills/kWh	0.038	0.045	0.056	0.074	0.108
Variable O&M Charge (including consumables)	mills/kWh	0.659	0.877	1.226	1.861	3.309
Total Cost	mills/kWh	0.838	1.092	1.493	2.211	3.821
PAC, Including additional PJFF and CEMS						
Retrofit PJFF? (full size)		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$110.342	\$110.891	\$111.094	\$111.413	\$112.065
Levelized capital carrying charge (const \$)	mills/kWh	2.577	2.590	2.595	2.602	2.618
Fixed O&M Charge	mills/kWh	0.088	0.089	0.090	0.092	0.096
Variable O&M Charge (including consumables)	mills/kWh	0.242	0.255	0.275	0.308	0.383
Total Cost	mills/kWh	2.907	2.934	2.960	3.002	3.096
PAC, Including additional PJFF and CEMS						
Retrofit PJFF? (COHPAC conv)		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$57.612	\$57.970	\$58.174	\$58.495	\$59.149
Levelized capital carrying charge (const \$)	mills/kWh	1.346	1.354	1.359	1.366	1.382
Fixed O&M Charge	mills/kWh	0.068	0.069	0.071	0.073	0.077
Variable O&M Charge (including consumables)	mills/kWh	0.243	0.257	0.277	0.310	0.385
Total Cost	mills/kWh	1.657	1.680	1.706	1.749	1.843

Model Plant 27

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		1	1	1	1	1
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		89.3%	89.3%	89.3%	89.3%	89.3%
Hg reduction by PAC		none	none	none	none	6.3%
Total Hg Out	mg/MWh	4.0	4.0	4.0	4.0	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.165	\$0.165	\$0.165	\$0.165	\$3.388
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	0.004	0.004	0.079
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.021
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.270
Total Cost	mills/kWh	0.005	0.005	0.005	0.005	0.370
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	yes
Capital Cost	\$/kW	\$0.165	\$0.165	\$0.165	\$0.165	\$110.412
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	0.004	0.004	2.579
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.086
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.213
Total Cost	mills/kWh	0.005	0.005	0.005	0.005	2.878

Model Plant 28

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE HS	DOE HS	DOE HS	DOE HS	DOE HS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		1	1	1	1	1
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		65.0%	65.0%	65.0%	65.0%	65.0%
Hg reduction by PAC		none	none	14.3%	42.9%	71.4%
Total Hg Out	mg/MWh	13.2	13.2	11.3	7.5	3.8
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.165	\$0.165	\$3.751	\$5.595	\$9.657
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	0.088	0.131	0.226
Fixed O&M Charge	mills/kWh	0.001	0.001	0.024	0.035	0.061
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	1.236	1.510	2.287
Total Cost	mills/kWh	0.005	0.005	1.347	1.675	2.573
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.165	\$0.165	\$57.533	\$57.767	\$58.241
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	1.344	1.349	1.360
Fixed O&M Charge	mills/kWh	0.001	0.001	0.067	0.068	0.071
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.217	0.237	0.282
Total Cost	mills/kWh	0.005	0.005	1.627	1.654	1.714

Model Plant 29

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		50.6%	50.6%	50.6%	50.6%	50.6%
Hg reduction by PAC		none	19.0%	39.2%	59.5%	79.7%
Total Hg Out	mg/MWh	16.6	13.5	10.1	6.7	3.4
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.165	\$3.971	\$5.271	\$7.430	\$12.057
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.093	0.123	0.174	0.282
Fixed O&M Charge	mills/kWh	0.001	0.025	0.033	0.047	0.076
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.709	0.901	1.277	2.282
Total Cost	mills/kWh	0.005	0.827	1.057	1.497	2.639
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	yes	yes	yes	yes
Capital Cost	\$/kW	\$0.165	\$57.563	\$57.729	\$57.989	\$58.518
Levelized capital carrying charge (const \$)	mills/kWh	0.004	1.345	1.348	1.355	1.367
Fixed O&M Charge	mills/kWh	0.001	0.067	0.068	0.069	0.073
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.220	0.234	0.258	0.311
Total Cost	mills/kWh	0.005	1.631	1.650	1.682	1.751

Model Plant 30

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		85.0%	85.0%	85.0%	85.0%	85.0%
Hg reduction by PAC		none	none	none	none	33.3%
Total Hg Out	mg/MWh	5.0	5.0	5.0	5.0	3.4
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.165	\$0.165	\$0.165	\$0.165	\$1.752
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	0.004	0.004	0.041
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.011
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.458
Total Cost	mills/kWh	0.005	0.005	0.005	0.005	0.510
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	yes
Capital Cost	\$/kW	\$0.165	\$0.165	\$0.165	\$0.165	\$57.674
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	0.004	0.004	1.347
Fixed O&M Charge	mills/kWh	0.001	0.001	0.001	0.001	0.067
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.000	0.000	0.229
Total Cost	mills/kWh	0.005	0.005	0.005	0.005	1.644

Model Plant 31

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		25.5%	25.5%	25.5%	25.5%	25.5%
Hg reduction by PAC		32.9%	46.3%	59.7%	73.2%	86.6%
Total Hg Out	mg/MWh	16.8	13.5	10.1	6.7	3.4
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$57.458	\$57.805	\$57.994	\$58.290	\$58.893
Levelized capital carrying charge (const \$)	mills/kWh	1.342	1.350	1.355	1.362	1.376
Fixed O&M Charge	mills/kWh	0.067	0.068	0.069	0.071	0.075
Variable O&M Charge (including consumables)	mills/kWh	0.229	0.241	0.258	0.287	0.353
Total Cost	mills/kWh	1.638	1.659	1.682	1.720	1.804

Model Plant 32

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	50.6%	50.6%	50.6%	50.6%	50.6%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	92.6%	92.6%	92.6%	92.6%	92.6%
Outlet Hg	mg/MWh	2.49	2.49	2.49	2.49	2.49
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	1.659	1.451	1.243	1.035	0.828
Total Cost	mills/kWh	11.206	10.998	10.790	10.583	10.375
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.940	1.243	1.546	1.849	2.152
Total Cost	mills/kWh	10.488	10.790	11.093	11.396	11.699
ECO, including CEMS						
Capital Cost	\$/kW	\$236.99	\$266.59	\$296.20	\$325.80	\$355.41
Levelized capital carrying charge (const \$)	mills/kWh	5.536	6.227	6.919	7.610	8.302
Fixed O&M Charge	mills/kWh	2.473	2.551	2.629	2.707	2.785
Variable O&M Charge (including consumables)	mills/kWh	1.243	1.243	1.243	1.243	1.243
Total Cost	mills/kWh	9.251	10.021	10.790	11.560	12.329

Model Plant 33

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	85.0%	85.0%	85.0%	85.0%	85.0%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	97.8%	97.8%	97.8%	97.8%	97.8%
Outlet Hg	mg/MWh	0.76	0.76	0.76	0.76	0.76
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	1.637	1.429	1.222	1.014	0.806
Total Cost	mills/kWh	11.184	10.976	10.769	10.561	10.353
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.919	1.222	1.524	1.827	2.130
Total Cost	mills/kWh	10.466	10.769	11.072	11.374	11.677
ECO, including CEMS						
Capital Cost	\$/kW	\$236.99	\$266.59	\$296.20	\$325.80	\$355.41
Levelized capital carrying charge (const \$)	mills/kWh	5.536	6.227	6.919	7.610	8.302
Fixed O&M Charge	mills/kWh	2.473	2.551	2.629	2.707	2.785
Variable O&M Charge (including consumables)	mills/kWh	1.222	1.222	1.222	1.222	1.222
Total Cost	mills/kWh	9.230	9.999	10.769	11.538	12.308

Model Plant 34

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	25.5%	25.5%	25.5%	25.5%	25.5%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	88.8%	88.8%	88.8%	88.8%	88.8%
Outlet Hg	mg/MWh	3.76	3.76	3.76	3.76	3.76
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	1.674	1.467	1.259	1.051	0.844
Total Cost	mills/kWh	11.222	11.014	10.806	10.598	10.391
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.956	1.259	1.562	1.865	2.167
Total Cost	mills/kWh	10.503	10.806	11.109	11.412	11.715
ECO, including CEMS						
Capital Cost	\$/kW	\$236.99	\$266.59	\$296.20	\$325.80	\$355.41
Levelized capital carrying charge (const \$)	mills/kWh	5.536	6.227	6.919	7.610	8.302
Fixed O&M Charge	mills/kWh	2.473	2.551	2.629	2.707	2.785
Variable O&M Charge (including consumables)	mills/kWh	1.259	1.259	1.259	1.259	1.259
Total Cost	mills/kWh	9.267	10.037	10.806	11.576	12.345

Model Plant 35

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFGD		1	1	1	1	1
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg Reduction of Existing Equipment		50.6%	50.6%	50.6%	50.6%	50.6%
Hg Reduction of AdvDryFGD		95.0%	95.0%	95.0%	95.0%	95.0%
Total Hg Removal		97.5%	97.5%	97.5%	97.5%	97.5%
Outlet Hg	mg/MWh	0.830	0.830	0.830	0.830	0.830
Capital Cost	\$/kW	\$162.17	\$182.31	\$202.57	\$222.82	\$243.08
Levelized capital carrying charge (const \$)	mills/kWh	2.821	3.172	3.524	3.877	4.229
Fixed O&M Charge	mills/kWh	0.854	0.961	1.067	1.174	1.281
Variable O&M Charge (including consumables)	mills/kWh	1.071	1.071	1.071	1.071	1.071
Total Cost	mills/kWh	4.747	5.203	5.662	6.122	6.581
Capital Cost	\$/kW	\$202.71	\$202.57	\$202.57	\$202.57	\$202.57
Levelized capital carrying charge (const \$)	mills/kWh	3.527	3.524	3.524	3.524	3.524
Fixed O&M Charge	mills/kWh	1.068	1.067	1.067	1.067	1.067
Variable O&M Charge (including consumables)	mills/kWh	0.950	1.010	1.071	1.131	1.192
Total Cost	mills/kWh	5.545	5.602	5.662	5.723	5.783
Reagent Cost	\$/ton	\$45	\$55	\$65	\$75	\$85

Model Plant 36

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP (hot)		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFGD		1	1	1	1	1
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg Reduction of Existing Equipment		85.0%	85.0%	85.0%	85.0%	85.0%
Hg Reduction of AdvDryFGD		95.0%	95.0%	95.0%	95.0%	95.0%
Total Hg Removal		99.3%	99.3%	99.3%	99.3%	99.3%
Outlet Hg	mg/MWh	0.252	0.252	0.252	0.252	0.252
Capital Cost	\$/kW	\$162.17	\$182.31	\$202.57	\$222.82	\$243.08
Levelized capital carrying charge (const \$)	mills/kWh	2.821	3.172	3.524	3.877	4.229
Fixed O&M Charge	mills/kWh	0.854	0.961	1.067	1.174	1.281
Variable O&M Charge (including consumables)	mills/kWh	1.072	1.072	1.072	1.072	1.072
Total Cost	mills/kWh	4.748	5.204	5.664	6.123	6.582
Capital Cost	\$/kW	\$202.71	\$202.57	\$202.57	\$202.57	\$202.57
Levelized capital carrying charge (const \$)	mills/kWh	3.527	3.524	3.524	3.524	3.524
Fixed O&M Charge	mills/kWh	1.068	1.067	1.067	1.067	1.067
Variable O&M Charge (including consumables)	mills/kWh	0.951	1.012	1.072	1.132	1.193
Total Cost	mills/kWh	5.546	5.603	5.664	5.724	5.785
Reagent Cost	\$/ton	\$45	\$55	\$65	\$75	\$85

Model Plant 37

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE LS	DOE LS	DOE LS	DOE LS	DOE LS
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFGD		1	1	1	1	1
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg Reduction of Existing Equipment		25.5%	25.5%	25.5%	25.5%	25.5%
Hg Reduction of AdvDryFGD		95.0%	95.0%	95.0%	95.0%	95.0%
Total Hg Removal		96.3%	96.3%	96.3%	96.3%	96.3%
Outlet Hg	mg/MWh	1.253	1.253	1.253	1.253	1.253
Capital Cost	\$/kW	\$162.17	\$182.31	\$202.57	\$222.82	\$243.08
Levelized capital carrying charge (const \$)	mills/kWh	2.821	3.172	3.524	3.877	4.229
Fixed O&M Charge	mills/kWh	0.854	0.961	1.067	1.174	1.281
Variable O&M Charge (including consumables)	mills/kWh	1.071	1.071	1.071	1.071	1.071
Total Cost	mills/kWh	4.747	5.203	5.662	6.122	6.581
Capital Cost	\$/kW	\$202.71	\$202.57	\$202.57	\$202.57	\$202.57
Levelized capital carrying charge (const \$)	mills/kWh	3.527	3.524	3.524	3.524	3.524
Fixed O&M Charge	mills/kWh	1.068	1.067	1.067	1.067	1.067
Variable O&M Charge (including consumables)	mills/kWh	0.950	1.010	1.071	1.131	1.192
Total Cost	mills/kWh	5.545	5.602	5.662	5.723	5.783
Reagent Cost	\$/ton	\$45	\$55	\$65	\$75	\$85

Model Plant 38

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	
Coal	DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB	
Size (MW)	100	100	100	100	100	
Existing Technologies						
SCR	0	0	0	0	0	
FF	0	0	0	0	0	
ESP	1	1	1	1	1	
SDA	0	0	0	0	0	
LSFO	0	0	0	0	0	
Retrofit Technologies						
PAC	1	1	1	1	1	
AdvDryFDG	0	0	0	0	0	
ECO	0	0	0	0	0	
WESP	0	0	0	0	0	
Hg CEMS	1	1	1	1	1	
Specified Hg reduction	50%	60%	70%	80%	90%	
Hg reduction of existing equipment	29.7%	29.7%	29.7%	29.7%	29.7%	
Desired Hg reduction by PAC	28.9%	43.1%	57.3%	71.5%	85.8%	
Actual Hg reduction by PAC without PJFF*	28.9%	43.1%	57.3%	69.3%	69.3%	
Total Actual Hg Reduction without PJFF*	50.0%	60.0%	70.0%	78.5%	78.5%	
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	
Capital Cost	\$/kW	\$0.840	\$2.651	\$6.887	\$55.806	\$55.806
Levelized capital carrying charge (const \$)	mills/kWh	0.020	0.062	0.161	1.304	1.304
Fixed O&M Charge	mills/kWh	0.005	0.017	0.043	0.350	0.350
Variable O&M Charge (including consumables)	mills/kWh	1.027	1.181	1.811	20.102	20.102
Total Cost	mills/kWh	1.052	1.259	2.015	21.756	21.756
Total Hg Out	mg/MWh	20.1	16.1	12.1	8.7	8.7
*With PAC injection on Subbituminous coals and only an ESP, Hg reduction at very high levels is not possible for this case. Additional PAC injection will not improve Hg reduction.						
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$57.102	\$57.585	\$57.939	\$58.466	\$59.479
Levelized capital carrying charge (const \$)	mills/kWh	1.334	1.345	1.353	1.366	1.389
Fixed O&M Charge	mills/kWh	0.065	0.067	0.069	0.072	0.079
Variable O&M Charge (including consumables)	mills/kWh	0.209	0.231	0.262	0.315	0.435
Total Cost	mills/kWh	1.608	1.643	1.685	1.753	1.903
Total Hg Out	mg/MWh	20.1	16.1	12.1	8.0	4.0

Model Plant 39

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP (hot)		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		60.7%	60.7%	60.7%	60.7%	60.7%
Hg reduction by PAC		none	none	23.6%	49.1%	74.5%
Total Hg Out	mg/MWh	15.8	15.8	12.1	8.0	4.0
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.165	\$0.165	\$1.308	\$1.799	\$2.696
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	0.031	0.042	0.063
Fixed O&M Charge	mills/kWh	0.001	0.001	0.008	0.011	0.017
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	1.057	1.097	1.186
Total Cost	mills/kWh	0.005	0.005	1.096	1.150	1.266
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.165	\$0.165	\$57.230	\$57.721	\$58.618
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	1.337	1.348	1.369
Fixed O&M Charge	mills/kWh	0.001	0.001	0.065	0.068	0.073
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.203	0.243	0.332
Total Cost	mills/kWh	0.005	0.005	1.604	1.659	1.774

Model Plant 40

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		12.6%	12.6%	12.6%	12.6%	12.6%
Hg reduction by PAC		42.8%	54.2%	65.7%	77.1%	88.6%
Total Hg Out	mg/MWh	20.1	16.1	12.1	8.0	4.0
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$57.365	\$57.852	\$58.217	\$58.766	\$59.834
Levelized capital carrying charge (const \$)	mills/kWh	1.340	1.351	1.360	1.373	1.398
Fixed O&M Charge	mills/kWh	0.067	0.069	0.071	0.074	0.081
Variable O&M Charge (including consumables)	mills/kWh	0.230	0.254	0.289	0.348	0.482
Total Cost	mills/kWh	1.637	1.674	1.720	1.795	1.960

Model Plant 41

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	29.7%	29.7%	29.7%	29.7%	29.7%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	89.5%	89.5%	89.5%	89.5%	89.5%
Outlet Hg	mg/MWh	4.24	4.24	4.24	4.24	4.24
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.966	0.704	0.442	0.181	-0.081
Total Cost	mills/kWh	10.513	10.251	9.990	9.728	9.466
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.258	0.442	0.627	0.811	0.995
Total Cost	mills/kWh	9.805	9.990	10.174	10.358	10.542
ECO, including CEMS						
Capital Cost	\$/kW	\$236.99	\$266.59	\$296.20	\$325.80	\$355.41
Levelized capital carrying charge (const \$)	mills/kWh	5.536	6.227	6.919	7.610	8.302
Fixed O&M Charge	mills/kWh	2.473	2.551	2.629	2.707	2.785
Variable O&M Charge (including consumables)	mills/kWh	0.442	0.442	0.442	0.442	0.442
Total Cost	mills/kWh	8.451	9.220	9.990	10.759	11.529

Model Plant 42

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	60.7%	60.7%	60.7%	60.7%	60.7%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	94.1%	94.1%	94.1%	94.1%	94.1%
Outlet Hg	mg/MWh	2.37	2.37	2.37	2.37	2.37
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.942	0.681	0.419	0.158	-0.104
Total Cost	mills/kWh	10.490	10.228	9.966	9.705	9.443
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.235	0.419	0.603	0.788	0.972
Total Cost	mills/kWh	9.782	9.966	10.151	10.335	10.519
ECO, including CEMS						
Capital Cost	\$/kW	\$236.99	\$266.59	\$296.20	\$325.80	\$355.41
Levelized capital carrying charge (const \$)	mills/kWh	5.536	6.227	6.919	7.610	8.302
Fixed O&M Charge	mills/kWh	2.473	2.551	2.629	2.707	2.785
Variable O&M Charge (including consumables)	mills/kWh	0.419	0.419	0.419	0.419	0.419
Total Cost	mills/kWh	8.427	9.197	9.966	10.736	11.505

Model Plant 43

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		DOE PRB	DOE PRB	DOE PRB	DOE PRB	DOE PRB
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		0	0	0	0	0
AdvDryFDG		0	0	0	0	0
ECO		1	1	1	1	1
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Hg reduction of existing equipment	%	12.6%	12.6%	12.6%	12.6%	12.6%
ECO Hg Reduction	%	85%	85%	85%	85%	85%
Total Hg Reduction	%	86.9%	86.9%	86.9%	86.9%	86.9%
Outlet Hg	mg/MWh	5.27	5.27	5.27	5.27	5.27
ECO, including CEMS						
Fertilizer Product Value	\$/ton	\$70	\$90	\$110	\$130	\$150
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.979	0.717	0.455	0.194	-0.068
Total Cost	mills/kWh	10.526	10.264	10.003	9.741	9.479
ECO, including CEMS						
Value of Power	mills/kWh	20	25	30	35	40
Capital Cost	\$/kW	\$296.20	\$296.20	\$296.20	\$296.20	\$296.20
Levelized capital carrying charge (const \$)	mills/kWh	6.919	6.919	6.919	6.919	6.919
Fixed O&M Charge	mills/kWh	2.629	2.629	2.629	2.629	2.629
Variable O&M Charge (including consumables)	mills/kWh	0.271	0.455	0.640	0.824	1.008
Total Cost	mills/kWh	9.818	10.003	10.187	10.371	10.555
ECO, including CEMS						
Capital Cost	\$/kW	\$236.99	\$266.59	\$296.20	\$325.80	\$355.41
Levelized capital carrying charge (const \$)	mills/kWh	5.536	6.227	6.919	7.610	8.302
Fixed O&M Charge	mills/kWh	2.473	2.551	2.629	2.707	2.785
Variable O&M Charge (including consumables)	mills/kWh	0.455	0.455	0.455	0.455	0.455
Total Cost	mills/kWh	8.464	9.233	10.003	10.772	11.542

Model Plant 44

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	
Coal	K Fuel	K Fuel	K Fuel	K Fuel	K Fuel	
Size (MW)	975	975	975	975	975	
SCR	0	0	0	0	0	
FF	0	0	0	0	0	
ESP	1	1	1	1	1	
SDA	0	0	0	0	0	
LSFO	0	0	0	0	0	
Retrofit Technologies						
PAC	1	1	1	1	1	
AdvDryFDG	0	0	0	0	0	
ECO	0	0	0	0	0	
WESP	0	0	0	0	0	
Hg CEMS	1	1	1	1	1	
Specified Hg reduction	50%	60%	70%	80%	90%	
Hg reduction of existing equipment	36.8%	36.8%	36.8%	36.8%	36.8%	
Desired Hg reduction by PAC	20.9%	36.7%	52.5%	68.3%	84.2%	
Actual Hg reduction by PAC without PJFF*	20.9%	36.7%	52.5%	68.3%	69.3%	
Total Actual Hg Reduction without PJFF*	50.0%	60.0%	70.0%	80.0%	80.6%	
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	
Capital Cost	\$/kW	\$0.391	\$0.673	\$2.240	\$14.462	\$26.735
Levelized capital carrying charge (const \$)	mills/kWh	0.009	0.016	0.052	0.338	0.624
Fixed O&M Charge	mills/kWh	0.002	0.004	0.014	0.091	0.168
Variable O&M Charge (including consumables)	mills/kWh	0.745	0.785	1.180	8.237	18.846
Total Cost	mills/kWh	0.756	0.805	1.247	8.666	19.638
Total Hg Out	mg/MWh	8.1	6.5	4.9	3.3	3.2
*With PAC injection on Subbituminous coals and only an ESP, Hg reduction at very high levels is not possible for this case. Additional PAC injection will not improve Hg reduction.						
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$35.922	\$36.177	\$36.333	\$36.565	\$37.009
Levelized capital carrying charge (const \$)	mills/kWh	0.839	0.845	0.849	0.854	0.864
Fixed O&M Charge	mills/kWh	0.060	0.061	0.062	0.063	0.066
Variable O&M Charge (including consumables)	mills/kWh	0.190	0.209	0.238	0.285	0.393
Total Cost	mills/kWh	1.089	1.115	1.148	1.203	1.323
Total Hg Out	mg/MWh	8.1	6.5	4.9	3.3	1.6

Model Plant 45

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		K Fuel	K Fuel	K Fuel	K Fuel	K Fuel
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		60.7%	60.7%	60.7%	60.7%	60.7%
Hg reduction by PAC		none	none	23.6%	49.1%	74.5%
Total Hg Out	mg/MWh	6.4	6.4	4.9	3.3	1.6
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.094	\$0.094	\$0.598	\$0.817	\$1.219
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.014	0.019	0.028
Fixed O&M Charge	mills/kWh	0.001	0.001	0.004	0.005	0.008
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.773	0.811	0.895
Total Cost	mills/kWh	0.003	0.003	0.791	0.835	0.931
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.094	\$0.094	\$36.076	\$36.295	\$36.697
Levelized capital carrying charge (const \$)	mills/kWh	0.002	0.002	0.843	0.848	0.857
Fixed O&M Charge	mills/kWh	0.001	0.001	0.060	0.062	0.064
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.193	0.230	0.315
Total Cost	mills/kWh	0.003	0.003	1.096	1.140	1.236

Model Plant 46

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		K Fuel	K Fuel	K Fuel	K Fuel	K Fuel
Size (MW)		975	975	975	975	975
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		12.6%	12.6%	12.6%	12.6%	12.6%
Hg reduction by PAC		42.8%	54.2%	65.7%	77.1%	88.6%
Total Hg Out	mg/MWh	8.1	6.5	4.9	3.3	1.6
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$36.096	\$36.353	\$36.517	\$36.764	\$37.246
Levelized capital carrying charge (const \$)	mills/kWh	0.843	0.849	0.853	0.859	0.870
Fixed O&M Charge	mills/kWh	0.061	0.062	0.063	0.065	0.068
Variable O&M Charge (including consumables)	mills/kWh	0.219	0.242	0.275	0.331	0.457
Total Cost	mills/kWh	1.123	1.153	1.191	1.254	1.395

Model Plant 47

	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	
Coal	K Fuel	K Fuel	K Fuel	K Fuel	K Fuel	
Size (MW)	100	100	100	100	100	
Existing Technologies						
SCR	0	0	0	0	0	
FF	0	0	0	0	0	
ESP	1	1	1	1	1	
SDA	0	0	0	0	0	
LSFO	0	0	0	0	0	
Retrofit Technologies						
PAC	1	1	1	1	1	
AdvDryFDG	0	0	0	0	0	
ECO	0	0	0	0	0	
WESP	0	0	0	0	0	
Hg CEMS	1	1	1	1	1	
Specified Hg reduction	50%	60%	70%	80%	90%	
Hg reduction of existing equipment	36.8%	36.8%	36.8%	36.8%	36.8%	
Desired Hg reduction by PAC	20.9%	36.7%	52.5%	68.3%	84.2%	
Actual Hg reduction by PAC without PJFF*	20.9%	36.7%	52.5%	68.3%	69.3%	
Total Actual Hg Reduction without PJFF*	50.0%	60.0%	70.0%	80.0%	80.6%	
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	
Capital Cost	\$/kW	\$0.817	\$1.431	\$4.792	\$29.800	\$53.860
Levelized capital carrying charge (const \$)	mills/kWh	0.019	0.033	0.112	0.696	1.258
Fixed O&M Charge	mills/kWh	0.005	0.009	0.030	0.187	0.338
Variable O&M Charge (including consumables)	mills/kWh	0.745	0.785	1.180	8.237	18.846
Total Cost	mills/kWh	0.769	0.828	1.322	9.120	20.441
Total Hg Out	mg/MWh	8.1	6.5	4.9	3.3	3.2
*With PAC injection on Subbituminous coals and only an ESP, Hg reduction at very high levels is not possible for this case. Additional PAC injection will not improve Hg reduction.						
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$56.936	\$57.409	\$57.748	\$58.248	\$59.202
Levelized capital carrying charge (const \$)	mills/kWh	1.330	1.341	1.349	1.361	1.383
Fixed O&M Charge	mills/kWh	0.064	0.066	0.068	0.071	0.077
Variable O&M Charge (including consumables)	mills/kWh	0.190	0.209	0.238	0.285	0.393
Total Cost	mills/kWh	1.584	1.616	1.654	1.717	1.853
Total Hg Out	mg/MWh	8.1	6.5	4.9	3.3	1.6

Model Plant 48

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		K Fuel	K Fuel	K Fuel	K Fuel	K Fuel
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		1	1	1	1	1
ESP (hot)		0	0	0	0	0
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		60.7%	60.7%	60.7%	60.7%	60.7%
Hg reduction by PAC		none	none	23.6%	49.1%	74.5%
Total Hg Out	mg/MWh	6.4	6.4	4.9	3.3	1.6
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	no	no	no
Capital Cost	\$/kW	\$0.165	\$0.165	\$1.269	\$1.744	\$2.611
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	0.030	0.041	0.061
Fixed O&M Charge	mills/kWh	0.001	0.001	0.008	0.011	0.016
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.773	0.811	0.895
Total Cost	mills/kWh	0.005	0.005	0.811	0.862	0.973
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		no	no	yes	yes	yes
Capital Cost	\$/kW	\$0.165	\$0.165	\$57.191	\$57.666	\$58.533
Levelized capital carrying charge (const \$)	mills/kWh	0.004	0.004	1.336	1.347	1.367
Fixed O&M Charge	mills/kWh	0.001	0.001	0.064	0.067	0.073
Variable O&M Charge (including consumables)	mills/kWh	0.000	0.000	0.193	0.230	0.315
Total Cost	mills/kWh	0.005	0.005	1.593	1.645	1.755

Model Plant 49

		CASE 1	CASE 2	CASE 3	CASE 4	CASE 5
Coal		K Fuel	K Fuel	K Fuel	K Fuel	K Fuel
Size (MW)		100	100	100	100	100
Existing Technologies						
SCR		0	0	0	0	0
FF		0	0	0	0	0
ESP (hot)		1	1	1	1	1
SDA		0	0	0	0	0
LSFO		0	0	0	0	0
Retrofit Technologies						
PAC		1	1	1	1	1
AdvDryFDG		0	0	0	0	0
ECO		0	0	0	0	0
WESP		0	0	0	0	0
Hg CEMS		1	1	1	1	1
Specified Hg reduction		50%	60%	70%	80%	90%
Hg reduction of existing equipment		12.6%	12.6%	12.6%	12.6%	12.6%
Hg reduction by PAC		42.8%	54.2%	65.7%	77.1%	88.6%
Total Hg Out	mg/MWh	8.1	6.5	4.9	3.3	1.6
PAC, Including additional PJFF and CEMS						
Retrofit PJFF?		yes	yes	yes	yes	yes
Capital Cost	\$/kW	\$57.315	\$57.792	\$58.145	\$58.676	\$59.707
Levelized capital carrying charge (const \$)	mills/kWh	1.339	1.350	1.358	1.371	1.395
Fixed O&M Charge	mills/kWh	0.067	0.068	0.070	0.074	0.080
Variable O&M Charge (including consumables)	mills/kWh	0.219	0.242	0.275	0.331	0.457
Total Cost	mills/kWh	1.624	1.660	1.703	1.775	1.932